(h) receiving said fourth ultrasonic signal at a location upstream of said second downstream location;

(g) computing the amount of said stratified flow in said conduit based on the travel times of said first, second, third, and fourth ultrasonic signals.

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33. (New) The method of claim 32, wherein said first portion is not said stratified flow.

34. (New) The method of claim 32, wherein said first portion is a gas.

35. (New) The method of claim 32, wherein said first and second ultrasonic signals travel in a generally horizontal direction.

36. (New) The method of claim 35, wherein said first and second ultrasonic signals are used to measure a speed of sound for a portion of said conduit not carrying said stratified flow.

37. (New) The method of claim 32, wherein said first and second ultrasonic signals travel in generally horizontal directions and said third and fourth ultrasonic signals travel in generally vertical directions.

38. (New) The method of claim 37, wherein said first and second ultrasonic signals are used to measure a speed of sound for a portion of said conduit not carrying said stratified flow and said third and fourth ultrasonic signals are used to measure a second speed of sound corresponding to a level of said stratified flow in said conduit.

39. (New) The method of claim 32, wherein said first ultrasonic signal is transmitted by a first transducer and received by a second transducer, said second ultrasonic signal is transmitted by said second transducer and received by said first transducer, said third ultrasonic signal is transmitted by a third transducer and received by a fourth transducer, and said fourth ultrasonic signal is transmitted by said fourth transducer and received by said third transducer.

40. (New) The method of claim 32, wherein said step of computing includes calculating a first measured speed of sound from said first and second ultrasonic signals, and a second measured speed of

sound based on said third and fourth ultrasonic signals, the discrepancy between said first and second measured speeds of sound indicating the level of said stratified flow.

41. (New) The method of claim 32, wherein said step of computing said amount of said stratified flow includes calculating the level of said stratified flow in said conduit.

42. (New) The method of claim 32, wherein said step of computing said degree of stratified flow includes determination of the amount of said stratified flow by computing a speed for said stratified flow.

43. (New) The method of claim 42, wherein said speed for said stratified flow is computed from the equation

$$V_L = \frac{V_G}{1+\sqrt{\frac{\rho_L}{\rho_G}}}$$

$\rho_L$=density of the liquid

$\rho_G$ = density of the gas

$V_L$ = velocity of liquid

$V_G$ = velocity of gas.

44. (New) The method of claim 32, wherein said step of computing includes computing the quantity of stratified flow through the conduit by multiplying a velocity for said stratified flow by a cross-sectional area of said stratified flow.

45. (New) The method of claim 32, wherein said degree is the depth of said stratified liquid flow.

46. (New) A flow meter suitable to determine the level of stratified flow through a conduit, comprising:

a first transducer suitable to transmit a first ultrasonic signal across said conduit and through a first medium traveling through said first medium from an upstream end to a downstream end;

a second transducer suitable to receive said first ultrasonic signal and to transmit to said first transducer a second ultrasonic signal;

a third transducer suitable to transmit a third ultrasonic signal through said first medium, said third ultrasonic signal positioned to reflect from a surface of said stratified flow;

a processor to compute an upstream transit time for said first signal, a downstream time for said second signal, and a level reflection transit time for said third ultrasonic signal, said processor further computing a level of stratified flow based upon said upstream transit time, said downstream transit time, and said level detection transit time.

47. (New) The flow meter of claim 46, further comprising:

a fourth transducer suitable to receive said third ultrasonic signal and to transmit to said third transducer a second level reflection transit time, wherein said processor additionally uses said second level reflection transit time to compute said level of stratified flow.

48. (New) The flow meter of claim 47, wherein a first speed of sound is computed based on said first and second ultrasonic signals and a second speed of sound is computed based on said third and fourth ultrasonic signals, the difference in said first and second speeds of sound providing a level of said stratified flow.

49. (New) The flow meter of claim 46, wherein a speed of sound can be computed by said first and second ultrasonic signals for said first medium regardless whether a stratified flow is present in said conduit.

50. (New) The flow meter of claim 46, wherein said first and second ultrasonic signals define a generally horizontal chord and said third ultrasonic signal defines a generally vertical chord.

51. (New) The flow meter of claim 47, wherein said first and second ultrasonic signals define a generally horizontal chord and said third and fourth ultrasonic signals defines a generally vertical chord.

52. (New) The flow meter of claim 47, wherein said processor computes a speed for said stratified flow.

53. (New) The flow meter of claim 47, wherein said processor computes a speed for said stratified flow

based on the equation:

$$V_L = \frac{V_G}{1+\sqrt{\frac{\rho_L}{\rho_G}}}$$

$\rho_L$=density of the liquid

$\rho_G$ = density of the gas

$V_L$ = velocity of liquid

$V_G$ = velocity of gas.

54. (New) The flow meter of claim 46, wherein said processor further computes a flow for said stratified flow based upon a velocity of said gas and a cross-sectional area of said stratified flow in said conduit.

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55. (New) A flow meter suitable to determine an amount of stratified flow through a pipeline, comprising:

means for generating a first set of signals through said pipeline;

means for generating a second set of signals through said pipeline, said second set of signals reflecting from a stratified flow of fluid if any;

means for computing said amount of stratified flow based upon differences in times of flight between said first set of signals and said second set of signals.

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Respectfully submitted,

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